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Fitch, Benjamin Franklin

Immediate relief for
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Immediate Relief for New York's Congested Port Terminal

*A Suggested Intermediate Program to Fit in
with the Ultimate Plan Recommended by
the New York, New Jersey Port and
Harbor Development Commission*



STATEMENT BY B. F. FITCH

President of The Motor Terminals Company
Chairman of The Cincinnati Motor Terminals Company

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FOREWORD

IT is the purpose of the following statement to outline a program immediately to meet the most serious need now facing the Port of New York; namely, an efficient and economical freight distribution and collection service for Manhattan.

This program is suggested not as a substitute for, but as a supplement to the ultimate plan recommended by the New York, New Jersey Port and Harbor Development Commission. It will serve to bring quick relief and important resulting benefits, during the several years required to put the ultimate plan of the Commission into practical operation.

It is here shown that this intermediate plan meets the full requirements of the situation both in a practical way and at small capital cost, through the use of existing facilities. When operative, it will save more than \$20,000,000 annually in trucking costs and \$10,000,000 in railroad costs, and will immeasurably reduce present terminal congestion, advancing the movement of freight not hours, but days.

THE statement is made by Mr. B. F. Fitch, a recognized authority on transportation problems and President of the Motor Terminals Company of New York and Cleveland. Previous to the incorporation of that company, he was, for six years, a transportation engineer, actively engaged in enlarging the sphere of the motor truck. For the past six years Mr. Fitch has been engaged in an extensive national study of the practical adaptation of the motor truck to railroad freight service as the logical means of lacing up existing disjointed terminal facilities.

In 1915 he undertook the development of intensive Railroad-Motor-Truck service, which resulted in the present Cincinnati installation, proven an unqualified success during its three years of operation. Here for the first time the unit-container-demountable-body, carried by motor truck, demonstrated the results and economies obtainable through their use in intensive railroad service. This system has been recognized by practical railroad operators as the most important advance in land transportation in the last quarter century.

In addition to exhaustive research into the possibilities for extending the service, Mr. Fitch has been engaged in a practical study of the New York freight distribution problem during the past five years.

—The Editor

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by

B. F. FITCH

Immediate Relief for New York's Congested Port Terminal

Statement by B. F. FITCH

WITH the issuance of the report of the New York, New Jersey Port and Harbor Development Commission, we have a comprehensive study and for the first time a complete analysis of the movement and tonnage demands of the Port of New York, its present serious deficiencies and its wasteful practices established by past necessities, but perpetuated by precedent and custom. Obviously, the findings of the Commission, over a three year period, bear weight. While the Commission perceives that the greatest need is to make New York a railhead port in so far as possible, it recognizes that the most pressing question *now* is freight service to Manhattan Island and in its summary report states it was early perceived that the present railroad pier stations must be the starting point for developing a comprehensive plan to release a large part of Manhattan and New Jersey water front, now so occupied, to ocean shipping; to eliminate the wastefulness of pier station operation and carfloat practice, rehandling and trucking delays; to decrease street congestion, and in short to advance the entire movement of this great volume of freight by efficiently speeding up the whole terminal operation with decreased costs to carrier, shipper and the public. The Commission's studies show that the New Jersey railroads contribute sixty-four per cent (64%) of Manhattan's total tonnage of 9,000,000 tons annually, the New York Central twenty per cent (20%), the New Haven ten per cent (10%), the remainder divided between Harlem River pier stations and the Long Island Railroad.

*The
Commission's
Report*

The great portion of Manhattan freight is now floated in cars by barge from rail float-bridge transfers at the water front yards to the railroad pier stations. This is a tedious and expensive operation, attended with delays and wasteful rehandling, holding trucks stand-

A Plan of Immediate Relief for

ing in line on the Marginal Way waiting to receive and deliver freight. The Commission reports the entire operation to represent an average terminal cost of \$2.90 per ton, at current prices, plus a weighted average trucking cost of \$2.17 per ton, a total of \$5.07 per ton, or \$45,630,000 annually harnessed on to shippers, truckmen and railroads. The public pays the bill.

The problem is one of primary distribution from the New Jersey railroads and secondary distribution from existing rail transfers in Manhattan and the Bronx. As an ultimate plan to solve this problem the Commission recommends a deep tunnel, automatic-electric railroad system connecting twelve Manhattan Island stations with a joint yard transfer station on the Hackensack Meadows, linking up the New Jersey railroads by a belt line. The automatic-electric railroad would operate from this joint yard in the form of a loop passing under Bergen Hill and the Hudson River to a point in Manhattan at about 47th Street; then under the streets southward to serve the inland stations to a point near Battery Place, whence the tracks would pass through another set of tunnels under the upper bay, completing the cycle to the joint yard. The cost is estimated at some \$207,000,000, exclusive of the loop extension proposed for New York Central and New Haven Railroad service from the north.

Obviously, some years will be required to complete the plan, after legal, financial, engineering and construction delays. But the Commission's recommendations point the way to undertaking an immediate evolutionary development, fitting in with the ultimate plan, that will quickly bring about the important results sought for. This can be accomplished at a minimum capital cost, and with the fullest use of all existing facilities, either by immediately building units of the joint inland terminals that the Commission recommends for Manhattan, or by using selected existing warehouses as a beginning. The terminals thus provided would be laced up with the present New York Central and New Haven rail stations and with New Jersey rail transfers, back of the water front, by intensive motor-truck operation in the highest stage of its development, as proven both practical and successful in over three years of actual railroad service at an inland city. Trucks with demountable bodies would be carried on present passenger-vehicular ferries, using their surplus capacity which the Commission considers adequate for the service.

New York's Congested Port Terminal

The Commission recognizes that the proposed special motor-truck freight service for primary, as well as secondary distribution, has "elements to commend it," and states that "it has several important advantages, such as the release of the Manhattan water front occupied by pier stations and the provision of new stations more centrally located that would argue in favor of its adoption in the absence of a still better plan," and further "mechanically, there is no reason why the motor-truck plan should not be practicable."

For more than four years I have stoutly maintained that the only means at hand quickly to effect adequate relief at the Port of New York, at comparatively small cost, is through the evolutionary development of such a system, directly dependent upon the inland zone terminals as distributing and reconsolidation points for less-than-truck-load consignments. The Manhattan problem is one of distribution and assembly, pure and simple.

THE benefits of the trucking system can be quickly obtained and would include the complete release to ocean shipping of Manhattan water front now held in railroad pier station occupancy—some thirty per cent (30%) of the total—release of fifty per cent (50%) of the New Jersey water front to ocean shipping as a railhead port, as well as effecting a tremendous annual joint economy in trucking and railroad costs. Moreover, the system would provide new stations in Manhattan more centrally located for consumers' demands. It would greatly decrease present commercial street traffic by moving in maximum loads, the maximum truck haul to destination, with minimum empty movement and without delays. It would clear the harbor waters of the movement of 300 car floats per day, and an unknown shuttle movement of tugs in this service.

*Benefits of
Railroad-Motor-
Trucking Service
Quickly Realized*

Truck load consignments would be routed direct between rail transfers and store-door, and smaller consignments consolidated at all rail transfers for direct maximum load haul to zone stations, where re-consolidations of smaller store-door loads for route delivery could be effected, and vice-versa on the outbound movement. In developing the system, shippers could be given the option of hauling in their own trucks, if desired, to and from zone stations. Briefly, this is the system of operation that I proposed to the Commission in a report, submitted at its request in August, 1919. In addition to the

A Plan of Immediate Relief for

release of valuable water front now held in railroad occupancy largely for Manhattan local distribution and interchange, the system not only would speed up the entire operation but also would accomplish an annual saving, based on the Commission's analysis of tonnage and present costs, of \$33,550,000 in existing joint railroad and trucking costs.

Immediate Relief at Small Capital Cost

IT is now conceded that store-door delivery and collection is rapidly becoming imperative for Manhattan, due to present intolerable waste and congestion. I think I am safe in saying that this view is held by practically all who have had occasion to make an intensive study of the subject and the great benefits that will be so derived, merely by bringing about a faster, direct flow of freight through the terminals—both those now existing and those yet to be built. The motor-truck, in intensively developed railroad service, has already demonstrated beyond a doubt what can be accomplished merely through better methods of operation insuring continuous movement, without the necessity of huge capital expenditures for physical expansion of terminal plant.

I have never maintained that such special motor-truck freight service would prove to be the best, ultimate and final plan, but ever since undertaking the study of the New York terminal situation in 1916, in connection with the then proposed joint terminal warehouse on the New Jersey water front, I have believed it to be the only means readily at hand of accomplishing the necessary benefits to carrier, shipper and the public, at small cost, with little delay. This system might not prove to be the best *ultimate* solution, but in the meantime the objective relief may be obtained merely by adapting a new system of operation, already proven a success in service, to current demands, at the same time advancing the program for effecting the Commission's ultimate plan, without the necessity of scrapping any intermediate investment and equipment values not paid for and worn-out in economic service.

Intensive Motor Trucking Program Included in Com- mission's Plan

IN its summary of the joint report, the Commission recommends, as the best opportunity for immediate relief, the inauguration of voluntary store-door delivery, through by-passing carload lot freight—some thirty per cent of the total—by direct motor-truck service between large shippers in Manhattan, and elsewhere

New York's Congested Port Terminal

in the port, and transfer platforms cheaply constructed at the large railroad yards. In accordance with my report to the Commission, it is stated that there should be a considerable number of demountable-unit-container truck bodies with a comparatively small number of chassis, so that goods could be transferred from the car to the unit-container at the transfer platform and delivered direct by truck to the consignee—the service to be controlled by some suitable medium between merchants and railroads. The Commission also states that this measure for immediate relief will involve no expenditures not utilized in the ultimate plan other than the construction of a few platforms for the motor truck chassis and unit-containers, and that voluntary store-door delivery should remain as an auxiliary to the automatic-electric system. The Commission *urges that this measure be adopted at once*. The ultimate plan includes the special truck service as a means of secondary distribution from the twelve proposed inland terminals, which were originally designed for this intensive motor-truck service, following the double-deck inbound and outbound plan that I recommended in collaboration with the Commission's engineers.

In this respect the Commission's proposal for immediate relief, together with the suggested ultimate plan, lacks only an operating program for quickly effecting the objective relief—not alone the thirty per cent relief through by-passing of carload freight. The key to this program is the immediate development of Manhattan inland zone stations laced up by intensive motor-truck service. This can be early obtained through the partial building of the terminals included in the ultimate plan; these to serve as distributing and re-consolidation points for less-than-truck load consignments, representing the remaining seventy per cent (70%) of the total tonnage that would ultimately be handled by the automatic-electric system.

AFTER an extensive investigation of possibilities for developing motor-truck service as a logical auxiliary to railroad service, and as a practical necessity, I first undertook the study of the New York distribution problem at the request of Mr. W. H. Lyford, who was retained by the American International Terminals Co. in connection with the proposed joint terminal and warehouse on the New Jersey water front. I soon arrived at the conclusion, and still maintain

*Development of
Intensive Railroad-
Motor-Truck
Service*

A Plan of Immediate Relief

that the only means for effecting efficient service for Manhattan is by establishing inland zone stations. At that time I proposed that Manhattan be served by an intensive trucking system utilizing special ferries operating from the proposed joint terminal in lieu of car float service. Subsequently, I found that existing ferries could handle the tonnage from segregated rail-motor-truck transfers, but it was thought that the ferry schedules would have to be considerably increased. *Now, the Commission's analysis shows that the ferry schedules will have to be increased but little, if any.*

At first it was proposed to use the tractor-trailer method. This was abandoned. Tonnage studies demonstrated resulting street congestion around terminals of trailers awaiting unloading and reloading, necessary rehandling costs and excessive ferry-deck consumption. As an alternative, I then proposed conveying freight in four-wheel low platform hand trucks with side frames, five each to be carried on the motor-truck platform for quicker unloading and reloading and to obviate the objections encountered by attempting trailer service. The test of this method proved it both costly and impracticable. As compared with larger units, loads proportionate with displacement could not be carried, due to disproportionate weights and dimensions of all less-than-carload commodities. The conclusion was drawn that the only *practical* means of intensive and efficient railroad-motor-truck service would be by developing the maximum capacity unit-container-demountable-body for full load utilization of cubical contents, to serve jointly as a large unit sorting bin at stations and to assure quick dispatch of maximum loads. This required highly specialized equipment, including hoists with weaving device for quick handling and alignment of body with truck. Immediately previous to incorporation of the Motor Terminals Company, such equipment was developed and proven in test service.

Thorough Test at Cincinnati

ALTHOUGH the early necessity for such a system of operation at the Port of New York was apparent, it was thought wise to make a thorough test at a point requiring less capital outlay. Under contract with the Motor Terminals Company, the Big Four Railroad first used the new system at Cincinnati, beginning operation, May, 1917, between its five main and sub-stations for the interchange and consolidation of less-than-carload freight. The system was a success from the start. It was adopted by the United States Railroad

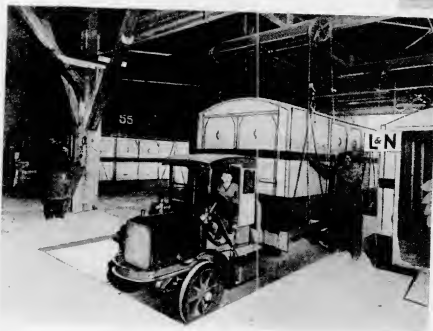
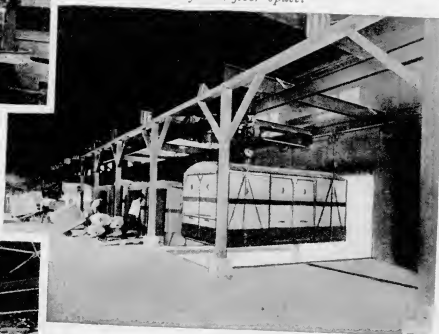
Railroad-Motor-Truck Installation at Cincinnati

*B. & O. R.R. Second and Smith Sts. Station.
Body removed and truck released in thirty
seconds for next movement demand.*



*B. & O. R.R. Second and Smith Sts. Station.
Outbound platform. Loaded body being trol-
leyed from truck chassis to platform. Truck
released—to drive to adjacent body setting.*

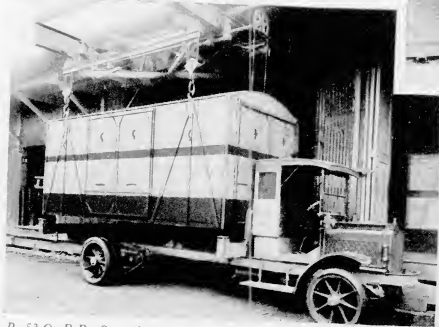
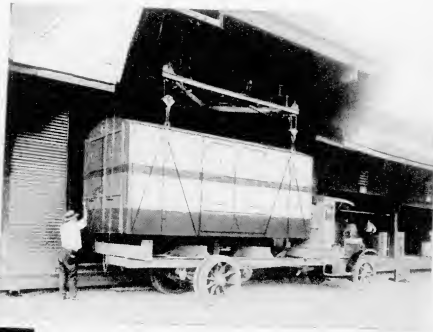
*Southern R.R. Fourth and Vine Sts. Station.
One of the "Body Settings" at inbound plat-
form. Direct run of freight from cars to unit
containers. No rehandling cost. Note abso-
lutely clear floor space.*



*Big Four R.R. Front St. Station. Chicago
division inbound platform. Truck pit obviates
roof elevation for headroom. Body being
hoisted from truck. One man operation.*

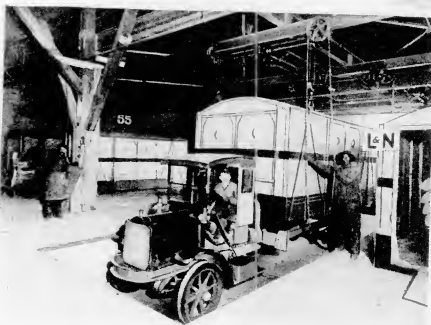
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A Plan of Immediate Relief for

Administration for terminal use between the main and sub-stations of all lines contributing to the Cincinnati Terminal to replace completely, expensive trap-car and horse-draw service. Briefly, the system consists of a number of demountable-unit-container bodies (225 in number, one for each railroad movement demand), electrically operated hoists for lifting and conveying bodies, and a fleet of 15 motor-truck chassis, operated under telephone control of railroads' joint dispatcher, to transport bodies over streets between stations. The system has advanced the movement of freight fifty-two hours and has eliminated the continuous daily service of 225 cars (trap cars collecting small consignments from various stations), 115 heavy horse drays and over 300,000 switch-cut movements annually. By reason of the present direct run of freight between cars and bodies (functioning as sorting bins on platforms), a saving in freight-house labor of thirty per cent has been effected. Tail-gate space previously confiscated by horse-draws is now available to shippers. As indicated by the actual figures of one of the contributing railroads, about twenty-eight per cent of *all* less-than-carload freight arriving at Cincinnati freight stations is being handled with fifteen motor-truck chassis. The same figures indicate a fifty-three per cent decrease in total loss and damage claims. *It is significant to note that this saving alone has amounted to more than that railroad paid for the service at published rates.*

*Huge Capital
Expenditure
Unnecessary*

PREVIOUS to installation of the system at Cincinnati, the terminal situation had become so serious that a large physical expansion of actual terminal plant at a cost of some \$12,000,000 was in contemplation. The United States Railroad Administration ordered an investigation by a Board of Engineers, which reported the possibility of expanding terminal capacity by such actual extensions. Trucking interchange, through the medium of the unit-container, has made the expenditure unnecessary merely by bringing about a faster flow of traffic through existing plant without the necessity for physical expansion of terminal rails and station platforms. Through the use of unit-containers as sorting bins on platforms, and by direct run of freight from cars to containers, station platform areas and station rails have actually been extended thirty per cent (30%). The capacity of the trucking system is twice the maximum demand so far imposed. The results have fully demonstrated what can be

New York's Congested Port Terminal

accomplished by lacing up existing disjointed terminal facilities by the motor truck and associate freight handling equipment, in the highest stage of proven development for railroad service.

AT the request of the New York, New Jersey Port and Harbor Development Commission, I submitted a plan to that body, August 13, 1919, for effecting immediate relief at the Port of New York by applying the operating system already proven. My recommendations were accompanied by detailed analysis of rail-transfer, zone distribution, loading of individual ferry routes, and necessary associate motor-truck equipment, based on the Commission's detailed findings of Manhattan zone movement and tonnage demands. I utilized Cincinnati experience as my authority.

*Recommendations
to the Commission*

Specifically, my recommendations to the Commission provided for the following:

To construct "Freight-Car, Motor-Truck Transfer Platforms" on available cheap realty adjacent to rail heads of all contributing lines.

To construct "Zone, Inland or Off-Track Stations" on Manhattan as joint distributing points for all lines.

Through terminal trucking company to be operated under jurisdiction or despatch direction of all contributing lines

- (a) run all truck load freight for large consignees to individual truck bodies (one of which will be set for each at the freight car, motor-truck transfer) to chassis, to store-door delivery at published tariff increase, plus an extra charge to be agreed to by contract between the terminal trucking company and the principal Manhattan shippers, who are scheduled as daily receivers from and delivers to each railroad of unit body truck loads.
- (b) run all less-than-truck-load freight direct from cars to bodies, to chassis, to zone stations for delivery to consignees or delivery to cartage contractors at published zone tariff increase, for later store-door delivery of such freight.

Such distribution would mean hauling the maximum load, the maximum distance to ultimate destination, with minimum delay and empty movement, to the practical elimination of cross-haul and back-haul as now practiced. The entire operation must be carried out under telephone dispatch.

A Plan of Immediate Relief for

All Manhattan freight to be hauled by the proposed trucking system *now* passes over the streets, mostly in partial loads, with empty movements, with delays, with waiting and standing in line and with back-haul and cross-haul. The system proposed would eliminate all such delays and would bring about the maximum direct haul in maximum loads, the maximum distance to point of delivery, greatly reducing the number of truck movements, and thus directly relieving intolerable congestion attending present practice. I have estimated—and with the Commission's report at hand, I think the estimate conservative—that the carrying capacity of Manhattan city streets for this trucking could be increased five hundred per cent by such a system before present congestion would be reached. In Cincinnati, fifteen motor-truck chassis have replaced the service of 115 heavy horse drays; have handled more than twice the tonnage, and nearly three times the ton miles.

Ferries Adequate for Requirements of the Service

THE Commission states that the ferries may be considered adequate for this additional vehicular traffic. It will amount to 7,500 four-ton truck loads per 16-hour day, inbound at peak load. Since the Manhattan freight movement is 60 per cent inbound and 40 per cent outbound, the inbound movement constitutes the maximum demand. The Commission's analysis shows this can be provided for between morning and evening rush hours and at night, and therefore, it considers the ferries adequate for the service, with the possible increase in schedules suggested in the Chapter on Ferries and Vehicular Tunnels. A material increase in the night ferry schedules would be desirable to provide for daily marketing distribution. The tunnel is not necessary to this service, and analysis shows that the whole operation can be carried out at less cost by the ideal *fanlike* distribution offered by the ferries than if the entire traffic passed through the tunnel necessitating *rectangular* distribution.

In practical railroad operation, the rail-motor-truck transfer platforms would serve as segregated points of each railroad, at which cars of l. c. l. freight could be consolidated to maximum load for uninterrupted line haul dispatch to destination without intermediate rehandling and without recourse to present l. c. l. transfer platforms now depended upon for line car consolidations. The advantages of a one-point make and break at origin and destination are well known

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to railroad men beset with problems of less-than-carload transportation.

WITH the movement and tonnage demands projected by the Commission; viz., 9,000,000 tons annually (30,000 tons daily), I have estimated that the mechanical equipment required would consist of 750 five-ton motor-truck chassis if operated on but one 8-hour shift; 375 on two shifts, with proportionate reduction if economy should require three 8-hour shifts. With each unit container body loaded to minimum average of four tons inbound and four tons outbound daily, operated on single shift 3,750 such bodies would be required, but, since tonnage movement averages 60 per cent inbound and 40 per cent outbound, the maximum of 4,000 bodies must be provided for single shift, 2,000 for double shift, with proportionate reduction for three 8-hour shifts. Trucks and bodies would thus represent a total investment of approximately \$6,500,000 on single shift operation; \$3,250,000 on double shift and proportionately less for three shifts.

Installation and Costs

It must be borne in mind that this program for immediate relief contemplates the fullest use of existing facilities, comprising many units to which the crane and hoist investment must be in ratio. Against such demands, the faster traffic flow through these units will permit of consolidation resulting in decreased investment for mechanical handling machinery, the extent of which must be established by detailed engineering studies of individual requirements. On available railroad realty *back of valuable waterfront*, ample standardized transfer platform units for maximum tonnage demands can be provided at a liberal estimate of \$6,000,000, including necessary electric cranes for single shift operation; \$3,000,000 for double shift, and proportionately less for three shifts.

BETTER service at less cost, preserving the individuality of carriers, will naturally further the evolutionary development of the system. The installation can be started in a small way and intensive operation will insure its rapid extension. Present Manhattan pier rentals paid by the railroads can be capitalized for such revision of their terminals as required, the investment thus incurred being amortized in a comparatively short time.

Evolutionary Development of the System

A Plan of Immediate Relief for

In accordance with the Commission's recommendation for immediate relief, the first step can be direct truck-load run of all carload freight—thirty per cent of the total—between rail transfers and store-door. In the meantime, and while units of the larger automatic-electric Manhattan terminals are being built, a few existing warehouses can be equipped for the service, as delivery and reconsolidation points for route deliveries—this to provide for the remaining seventy per cent of the tonnage represented by less-than-car-load consignments. The direct inducement to warehouses would be increased rental values and decreased handling cost of storage freight through their conversion into inland zone stations. An alternative would be the erection of standard section rail-motor-truck transfer units on any available vacant realty on Manhattan, subject to short term lease, as temporary inland terminals. This is possible because these standardized units are designed for use as either transfer or zone stations, at option. The initial cost of such installation, for total tonnage demands, would not exceed \$4,000,000, excluding realty rentals, and this investment would represent seventy-five per cent (75%) salvage value for re-location at any other inland station or transfer points as recommended by constantly varying traffic demands resulting from industrial and municipal development. With the partial completion of the proposed twelve Manhattan terminals, the equipment could be changed over as soon as found expedient or remain as experience dictates.

The Ultimate Extension

DEVELOPMENT of store-door delivery and collection, to fit in with the ultimate plan of the Commission, should be an accomplished fact within a very short time. Economies to shippers from actual quoted service rates would in almost every case be so apparent that the service would be quickly welcomed. In a few special cases individual requirements can be considered and served.

Pending the completion of the automatic-electric system, at least two sets of equipment would be worn out in service, and renewals would be based on service demands for secondary distribution only, in connection with the automatic-electric railroad. Not a dollar's worth of investment need be lost and the cost to railroads of transfer platforms will have been paid for with a profit by operating economies during the intermediate period.

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THERE are innumerable special commodities to handle to which the flexibility of the system is peculiarly adapted. For instance, various classes of food products received daily would be the subject of special attention and segregation, with a speed of handling insuring against loss, damage and rotting. The inland terminals, through evolution, would naturally become new marketing centers, located best to meet consumers' demands.

*Advantages of
the System's
Flexibility*

As the system approaches complete effectiveness, its flexibility would be evidenced by expansion to inland stations serving the east bank of Manhattan, the Bronx, Brooklyn and Queens. It can also serve coastwise and steamship transshipments and barge canal terminals. Its platform space economy and speed of operation are a ready means of handling the express business of New York. In case of emergency the entire equipment *can be concentrated almost immediately* at any point or points through the expedient of telephone dispatching, proven so effective at Cincinnati.

The New Jersey shipper is now driven to Manhattan for his freight by present lack of equalized shipping facilities in Jersey. With the natural influence to establish inland zone stations in New Jersey, served from the same rail-motor-truck transfers, present back-haul over the ferries would practically disappear. The capacity of the ferries for the trucking service would thus be directly increased.

THE proposed trucking service can be quickly provided and important results immediately obtained. Even with a small beginning, two years should suffice, if inland terminals are improvised or built, to make the system one hundred per cent effective for handling the entire tonnage now passing through Manhattan pier stations and railheads. The results accomplished would be:

*Results Quickly
Obtainable*

1. Complete release to ocean shipping of Manhattan water-front now held in railroad pier station occupancy—30 per cent of the total.
2. Release of 50 per cent of the New Jersey water-front to ocean shipping as a rail-head port.
3. Clearing the Harbor waters of the movement of 300 car-floats per day and an unknown shuttle-movement of tugs in this service. Float movements of commodity car loads for team-track delivery could continue.

A Plan of Immediate Relief for

4. Decreased costs to railroads by diminishing car-float and pier station operation, excessive rehandling costs and claims for loss and damage.

5. Clearing the Marginal Way and longitudinal thoroughfares of trucks now in pier station service, thus directly offsetting present traffic inadequacies of these saturated North and South arteries.

6. Greatly decreased street traffic by moving in maximum loads, the maximum distance to destination, with minimum delay and empty movement.

7. Direct benefit and saving to truckmen by greatly increased tail-gate capacity of terminals to elimination of all waiting and standing in line.

8. Increasing and equalizing Manhattan realty values by the early development of the inland stations, through direct traffic influence on distribution areas so served.

9. Finally, the greatest benefit would be to shippers, carriers and public, by advancing the whole movement, speeding up deliveries and collections, and by reduced trucking costs.

To justify the trucking system as an intermediate program it should be realized that these direct benefits comprise those to be derived from the automatic-electric system, with two general exceptions. First, the system does not contemplate ultimate elimination of existing New York Central's Manhattan rails, which might be considered an asset, subject to operating experience, which alone best could dictate a diversion movement elsewhere for Manhattan trucking. Second, the system would require the daily movement of 4,500 trucks, inbound and outbound, distributed between twelve ferry routes and twelve zones, representing a route movement in one direction of only 47 trucks per hour, or 24 trucks per hour on double shift and 16 trucks per hour on three shifts, not required by the automatic-electric system. Also it should be considered that these 24 trucks per hour on double shift would radiate from twelve ferry slips to distributed destinations.

In addition to these benefits, accomplished both by the trucking system and by the automatic-electric system, the following should also be credited to the trucking system:

1. Increased ferry earnings, and better schedules for passenger service.

2. Segregated railroad platforms for one-point "make and break" of loads to weight or displacement capacity of

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cars for uninterrupted dispatch to destination without expense and delays of intermediate rehandling.

3. *Flexibility of service for extension to coastwise, steamship, canal and express business, and for service to New Jersey and all boroughs of New York City by evolutionary development of inland stations located on any available realty best to meet service demands.*

4. Direct store-door run of thirty per cent of all tonnage without rehandling at inland terminals.

Flexibility of the system for extension to various services is distinctly a major advantage and one that would later be available for all secondary distribution in connection with the automatic-electric system.

IN the chapter on trucking, the Commission's report shows clearly what may be accomplished in eliminating present tremendous trucking losses, merely by an efficient trucking system effectively tied in with existing terminal plant to insure moving the maximum load the maximum haul to destination with minimum delay and empty movement.

Present Trucking Losses

I quote from the Commission's report:

"The data obtained from the time truck studies show that the horse trucks carried on the average of only 38.53 per cent of their capacity. On the basis of an average working day of 8 hours 17 minutes, as indicated for horse-drawn trucks in the time truck studies, at \$1.80 per hour, the daily cost of a horse-drawn truck may be assumed to be \$14.91. The average tonnage shown to have been handled in a day was 7.22 tons. This makes the cost per ton \$2.07. If full loads could have been obtained the cost per ton would have been only 80 cents, which indicates the waste of \$1.27 per ton.

"The motor trucks covered by the time studies showed a load-carrying efficiency of 67.27 per cent. They covered an average of 22.39 miles and carried an average tonnage of 11.10 tons—The cost per day of a truck would be \$18.29 plus \$0.2167 per mile, to which sum 15 per cent profit should be added (included in the \$1.80 per hour for horse trucks), giving a total of \$26.61 per day. The cost per ton thus comes to \$2.40. If full loads could have been obtained, the cost per ton would have been only \$1.61. The waste is, therefore, about 79 cents per ton. The figures in all cases disregard idle time."

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These studies were made in connection with present railroad pier station operation and it is stated by the Commission that the figures *do not include idle time*. Time studies showed that horse-drawn drays and motor trucks are each idle three hours per day or 37 per cent of the time. This reduces the above efficiency of the horse dray to approximately 24 per cent (24%) and that of the motor truck, under present practice, to approximately 42 per cent (42%). In addition, the Commission's observations of mileage performance from four pier stations and one rail station indicate an average mileage-routing efficiency of only 80 per cent, bringing the over-all efficiency of the horse dray and the motor truck down to 19 per cent (19%) and 34 per cent (34%), respectively. On the Commission's estimate that probably 70 per cent of the total freight is carried in horse trucks, the weighted average would be 23 per cent (23%) efficiency. This includes *no* allowance for waste in back-haul and cross-haul as required by existing Manhattan practice, representing at least 30 per cent (30%) avoidable lost movement.

These observations of present trucking waste necessitated by terminal facilities and methods of distribution as they exist are striking in the direct indication of the tremendous yearly consumers' cost. Considering alone 9,000,000 tons of freight annually to be handled by the proposed trucking system, the *loss* from present trucking waste may be represented by the equation:

$$\$2.25 \times 9,000,000 \times (1.00 - 0.23) \times 1.30 = \$22,300,000$$

using a back-haul factor of 1.30. This calculation is based upon *actual trucking losses observed by the Commission's engineers*.

In addition to this direct loss annually, resulting but avoidable street congestion, delays and confusion constitute an assessment on the community at large. With an average trucking efficiency of only 23 per cent (23%) without considering a tremendous volume of back-haul, it is not illogical to conclude that the carrying capacity of the city streets for this commercial traffic could be increased *at least* 500 per cent before present congestion would be reached.

These trucking wastes and intolerable congestion of commercial traffic would be entirely eliminated by the proposed trucking distribution without condemnation of property for new thoroughfares and without enormous expenditure for double-decking existing streets.

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OBJECTIONS to this system as the best ultimate solution of the problem are raised in the Chapter of the Commission's Report devoted to the Motor Truck Plan. Although special motor truck freight service is now proposed as an intermediate program, these objections may well be considered.

Analysis of Objections Raised

The Commission recognizes that the system is mechanically practicable and that it has elements to commend it. But objection to it as a final plan is raised on several grounds, which, analyzed, are as follows:

1. It would be independent of fogs, ice or other river hazards.

In the worst weather the ferries handle passenger traffic and they ought, therefore, to be satisfactory for freight traffic, even if the operation were retarded for an hour by a half day of fog. Ice hazards have not stopped the ferries, but in case of extraordinary emergency, the vehicular tunnel could be used or ice breakers employed.

2. It would function satisfactorily under all conditions.

Under *all* conditions the system might not function on exact schedule, but the slack could be quickly taken up by extending the time of one shift. Heavy snow storms in the past have not proven a limiting obstacle to large, well-maintained trucks even *pending* clearing of the streets. In an emergency, at half an hour's notice by telephone dispatch, the entire motor-truck equipment of the terminal company could be thrown over for a few hours to aid the trucks of the Street Cleaning and Fire Departments in the work of clearing routes, and at the same time carry route loads. But under all circumstances the system would serve the needs of the city far better than does present practice. Extraordinary circumstances might delay the service, but it would be only brief and temporary delay, by no means approaching the *disaster of an embargo*. During the entire period that store-door delivery was effective in the city of Baltimore, embargoes were unknown.

3. Ferries are adequate for the service.

On page 246 of its report the Commission states that "the ferries can be considered quite adequate to the requirements of the system." This contemplates a slight increase in present schedules. Since the established marketing distribution system of Manhattan requires that a very large proportion of the foodstuffs be moved to the Island at night for morning delivery, a large part of the ferry

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movement should take place at night with increased schedules and resulting absence of this traffic in the streets during the day. In fact, I believe that almost the entire distribution, with the exception of direct truck-load runs between store-door and rail transfer, *could* be accomplished at night. At present the ferries operate at night but only on greatly decreased schedules. The inducement to the railroads would be more revenue trips at but slightly increased costs for fuel and minor maintenance, since boats are there with partial crews to operate them. The increased ferry schedules would mean increased earnings to the railroads. With the entire system under telephone dispatch, truck-loads would be distributed by ferry routes and schedules to insure against unnecessary waiting time and conflict with existing vehicular traffic over the ferries. *The system is essentially and inherently flexible.* Also, it must be remembered that present ferry traffic includes an indeterminate volume of back-haul movement that would disappear with the natural influence to establish inland terminal motor-truck stations in New Jersey.

4. Service cost per ton considerably less than under present methods.

The estimates of the system's service cost reported by the Commission are hardly comparable since the figures assume operation, not from points back of the New Jersey water front on the east side of Bergen Hill, but from the proposed joint yard on the Hackensack Meadow, adding $4\frac{1}{2}$ miles to the average trucking distance on routes over summits 100, 160 and 180 feet above sea level. My recommendation is that the transfer points be established back of the water front but on the east side of Bergen Hill. In the case of each railroad there is property available for such transfers with the necessary rail connections, and without impairing the logical use of the large portion of the New Jersey water front for ocean shipping as a railhead port. For the purpose of arriving at the best *ultimate* solution, the Commission did not consider that the case warranted the further study necessary to determine whether it would be feasible to establish such transfers. Therefore, it based comparative service cost analysis on operation from a joint yard on the *west* side of Bergen Hill.

The Commission reports a difference of 46c. per ton in favor of the automatic-electric system. This occurs in the item of moving freight to the Manhattan Terminals. Other cost items for handling at each end of the haul are reported as identical with the cost of the

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automatic-electric system. Obviously, the estimate for the trucking system haul would be considerably reduced by placing the transfers on the east side of Bergen Hill, back of the water front. This would result in costs much less than under present practice.

5. No delays or confusion at ferry entrances.

The Commission's objection to the system in respect to the handling of vehicular traffic at ferry entrances would be overcome by an increase in night ferry schedules, a small increase in day schedules, the telephone dispatching system, and better police traffic regulation at the ferry entrances in co-operation with the railroads. Based upon the Commission's figures of tonnage and movement demands, the average time of arrival of five-ton unit container loads at each ferry slip at rail transfer side would be 3.3 minutes, based on maximum movement inbound on 16-hour operation during a peak load day. Without any attempt to redistribute traffic by telephone dispatch, the shortest interval of arrival at any ferry slip—the Desbrosses Street ferry of the Pennsylvania Railroad—would be 1.8 minutes for 16-hour peak day operation. These figures are based upon actual movement demands, developed in detail at the request of the Commission but not considered necessary to reproduce in this statement. Obviously an increase in night schedules and *telephone dispatch distribution* would eliminate any serious congestion, since both ferries and trucks are mobile.

6. No congestion of traffic at inland terminals.

Objection to the system on the ground that it would result in street congestion at the twelve inland terminals is not sustained. Assume a peak day operation of 30,000 tons inbound to Manhattan, of which 9,000 tons will be run direct to store-door. This means a daily arrival at twelve terminals of 5,250 four-ton loads or the arrival at each terminal of 437 trucks per day, distributed over 16 hours, or 27 trucks per hour arriving and departing from the terminal. At intervals of two minutes the trucks would drive under cranes, where practice has established that loads can be interchanged in one minute. In this respect the receiving capacity of the terminals designed by the Commission for this service could be immeasurably increased before any adjustment would be necessary. A two minute headway between trucks is in no way comparable to present street congestion on the Marginal Way and on the principal commercial thoroughfares.

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This two-minute headway must be considered an average for a peak day, but obviously, it allows ample margin for such "bunching" as contingencies of operation might develop, since the principal traffic thoroughfares now carry commercial vehicles at ten-second headway. Telephone dispatch would check any undue or long continued "bunching."

*Primarily
the Problem Is
Distribution*

THE Manhattan freight problem is distinctly one of distribution and assembly. Therefore, I cannot second the proposal of the Commission for a consolidated rail transfer *for trucking service* because it would impose longer hand-trucking distances from cars to motor-truck bodies and vice-versa. In reality, I believe, the transfer platforms can each be no longer than individual switch-cut movement opportunities. They can be established, not on valuable New Jersey water front, but on realty quickly provided through utilization of standard-section platform and crane units on team tracks or any cheap available property *back* of the water front. If space permits, they can be extended in ratio with multiples of switch-cut movements, and located on any available realty enjoying existing lead rail facilities to outer classification yards of each individual railroad. While greater length of haul would not prohibit truck service, it would be reflected in rates. Hence, the logical location for transfers should be decided by comparison of value of available realty versus mileage costs.

For several years I have maintained that the possible joint annual economy to shipper and carrier through the proposed trucking system at this Port would amount to \$45,000,000, based on findings indicating 50,000 tons daily. Now the Commission's findings indicate 30,000 tons daily, projected for 1924, and on this basis the *proportionate* economy would become \$27,000,000. However, in light of the cost of \$2.90 per ton to railroads, as now reported by the Commission, the trucking system would effect a saving to railroads of at least \$1.25 per ton, including all comparative present fixed charges of operation, but excluding the incalculable benefits and economies resulting from consolidated loadings, released equipment and minimized loss and damage claims. Thus, the *direct* annual economy to railroads becomes \$11,250,000. An additional direct saving in

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present trucking costs of \$22,300,000 has been shown from the Commission's findings. Therefore, the indicated total annual saving through the proposed trucking system would become \$33,550,000.

Cost estimates, when duly developed in detail for special cases, may necessitate adjustments for individual requirements. Considered from the standpoint of rates, for operation as a private venture, there must be a fair margin of profit over and above all charges, fixed and operating, both in the case of the trucking system and of the automatic-electric system.

The objections raised, at any rate, are no bar to the system as an intermediate, evolutionary program to bring quick relief.

LITTLE, if anything, has been done in the past fifteen years to improve conditions at New York's congested port terminal. Instead they have grown worse. The Commission's report shows plainly that the situation has become intolerable.

*Immediate Relief
Versus Unknown
Delay*

As a means of relief, in addition to the special motor truck service, four principal plans for Manhattan freight service were considered by the Commission, respectively involving expenditures of \$262,000,000, \$247,000,000, \$207,000,000 and \$75,000,000. Each of the four would require radical changes in existing facilities and big construction programs covering three to five year periods, after inevitable preliminary delays for litigation, financing and engineering.

Of all the plans considered, the special motor trucking system is the *only* one quickly obtainable at small capital cost, making the fullest use of facilities as they exist and available as an adjunct for secondary distribution to all other plans proposed. Moreover, it embodies a system of operation proven in service and it can be quickly worked out as an intermediate program to fit in exactly with the Commission's ultimate plan without the scrapping of any investment values not used in the plan or paid for and worn out in economic service.

It has been shown that the proposed trucking system assures all of the important results to be accomplished by the recommended ultimate plan. Also, that its *inherent* flexibility would make possible extensions to other important services of the Port. With the system fully operative, it can be determined in actual service how soon a capital expenditure of \$207,000,000 will be desirable. The saving of

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the annual interest on this sum during the period of this intermediate motor-trucking program warrants serious consideration.

In any case, some years will be required to effect the ultimate plan. But the time for action is now. Immediate relief is available. Therefore, construction of units of the inland terminals included in the ultimate plan should begin as quickly as practicable. They were designed for this special trucking service. Without them, relief by trucking can only be thirty per cent effective. With them, it can be one hundred per cent effective. A direct saving of \$33,000,000 annually will result. All this can be quickly obtained by co-operative effort between shippers, carriers and a competent trucking organization, enjoying the sanction and support of all contributing factors.



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THE motor terminal system at Cincinnati, providing for the handling of freight between the various terminals by motor trucks with removable bodies which can be placed in the freight terminals for loading direct from the cars picked up by the motor trucks when the loading is completed, was inaugurated May 10, 1919, and is working satisfactorily. Some of the advantages are quick dispatch of freight; saving of two handlings; 50 per cent decrease in damage to freight in loading and unloading; and decrease of about 15 per cent per ton in cost of handling.—Walker D. Hines, Director General, United States Railroad Administration, in 1919, Eastern Region Report (page—24).

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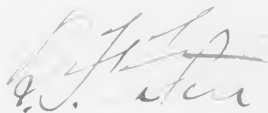
61 Broadway,
New York, Sept. 12, 1921.

My dear Mr. Lindsay:

In thanking you for proceedings of the Academy of Political Science, I take the opportunity of enclosing a constructive program for the port of New York, recently confidentially issued to those vitally interested. As a codicil, so to speak, of the summarized expressions you have honored me by publishing, I think some of the statistics and ideas contained in this report may be of interest.

Again thanking you for the opportunity of probing the public on this all important subject and assuring you my future cooperation, as well as results of my national studies, are always at the disposal of the Academy of Political Science, I am,

Very truly yours,



Mr. Samuel M. Lindsay,
Columbia University,
New York City.

Enc.

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1. *Journal of the American Medical Association*, 1997; 277: 1033-1037.

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